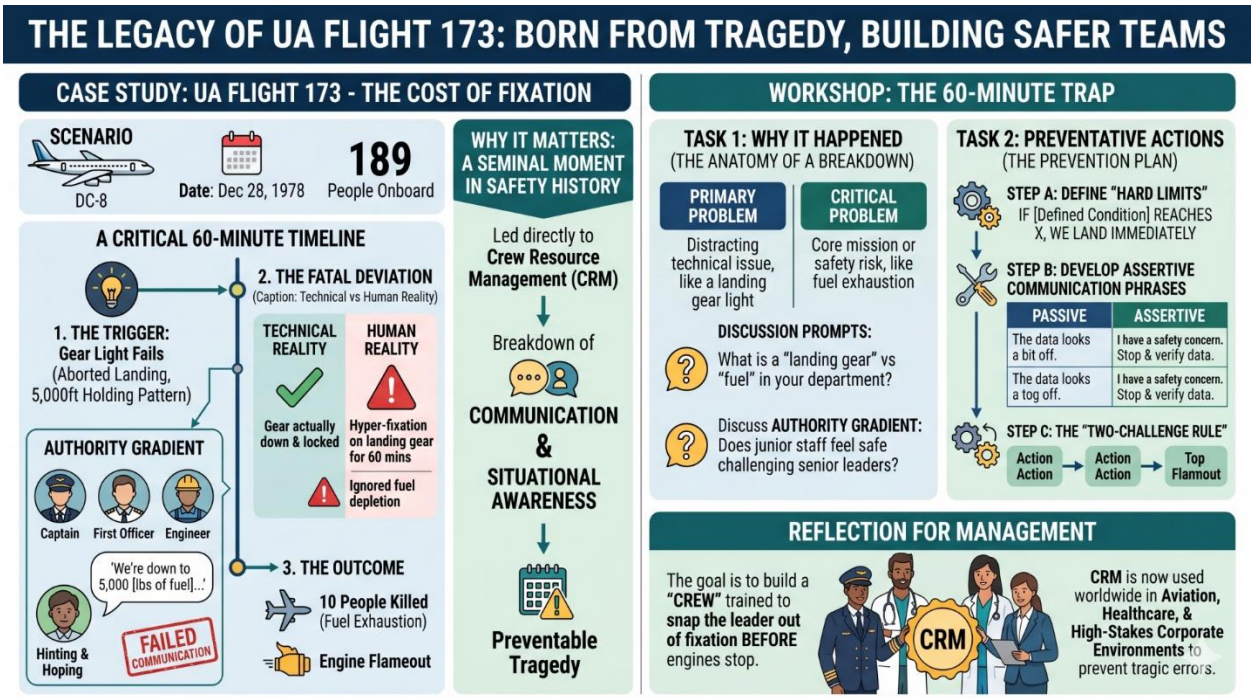
Crew Resource Management (CRM) Case Study - United Airlines Flight 173



Introduction

The crash of United Airlines Flight 173 in 1978 is a seminal moment in safety history. It led directly to the creation of Crew Resource Management (CRM), a training system now used worldwide in aviation, healthcare, and high-stakes corporate environments.

The following case study and workshop are designed to help your team analyze the breakdown of communication and situational awareness that led to a preventable tragedy.

Case Study: The Cost of Fixation

Scenario: United Airlines Flight 173 (DC-8)

Date: December 28, 1978

Context: The aircraft was on final approach to Portland with 189 people on board.

The Triggering Event - Upon lowering the landing gear, the crew heard a loud "thump" and felt an unusual vibration. The "gear down and locked" indicator light for the right main gear failed to illuminate.

The Decision - Captain Malburn McBroom decided to abort the landing and enter a holding pattern at 5,000 feet. He wanted time to troubleshoot the gear and prepare the cabin for a potential crash landing.

The Fatal Deviation

- **The Technical Reality:** The gear was actually down and locked; a corroded part had caused the "thump" and broken the indicator circuit.
- **The Human Reality:** For the next **60 minutes**, the Captain became hyper-fixated on the landing gear. He ignored the ticking clock of fuel consumption.
- **The Power Dynamics:** The First Officer and Flight Engineer were aware the fuel was reaching critical levels. However, they used "hinting and hoping" language rather than direct confrontation.
    - *Engineer:* "We're down to five thousand [pounds of fuel]..."
    - *Captain:* "Okay." (Continues discussing landing gear)
- **The Outcome:** At 18:06, while the Captain was still calmly discussing the landing gear, the first engine flamed out due to fuel exhaustion. The aircraft crashed in a wooded suburb, killing 10 people.

Workshop: "The 60-Minute Trap"

Objective: To identify how "tunnel vision" and hierarchical barriers manifest in your organization and to develop "Stop-Work Authority" protocols.

Task 1: Why it Happened (The Anatomy of a Breakdown)

- **Group Discussion:**
    - Identify the Primary Problem vs. the Critical Problem. (In this case, the gear was the primary problem, but fuel was the critical one).
    - In your department, what is a "landing gear" (a distracting technical issue) that often causes people to lose sight of the "fuel" (the core mission or safety risk)?
- **Analysis:** Why didn't the junior crew members shout, "We are going to crash in 5 minutes if we don't land now"?
    - *Prompt:* Discuss "Authority Gradient." Does your junior staff feel safe challenging a senior leader?

Task 2: Understanding the "Fixation" Signal

- **Activity:** Map the "Fixation Timeline."
    - Review the transcript snippets where the Engineer mentions fuel.

- At what point did the Captain lose **Situational Awareness**?
- **Workplace Parallel:** Identify a past project or incident in your company where a team was so focused on a minor detail that they missed a major deadline or budget collapse.

Task 3: Determining "Never Again" (The Prevention Plan)

- **Workshop Output: The "Red Flag" Protocol**
  - **Step A:** Define "Hard Limits." For Flight 173, it should have been: *"If fuel reaches X, we land immediately, gear-light or not."* What are the "Hard Limits" for your projects?
  - **Step B:** Develop **Assertive Communication** phrases. Practice moving from "Passive" to "Direct":
    - *Passive:* "The data looks a bit off."
    - *Assertive:* "I have a safety concern. We need to stop and verify the data before proceeding."
  - **Step C:** The "Two-Challenge Rule." If a junior team member raises a concern and it is ignored, they are *required* to challenge it a second time with greater intensity or escalate it.

Reflection for Management

The NTSB concluded that the captain was "preoccupied." The goal of this workshop is not to blame the "Captain" in your organization, but to build a "Crew" that is trained to snap the leader out of fixation before the engines stop.